IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

REMARKS

Entry of new claims 41 to 48 is respectfully requested.

Respectfully Submitted,

10/15/2002

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Version With Markings to Show Changes Made

In the Claims.

41. (New) A method of forming a contact plug, comprising the steps of:

selectively making a hole in an insulating layer that has a top surface, a side-wall surface being thereby formed in said insulating layer to define said hole;

forming a barrier layer on said top surface of said insulating layer such that a first portion of said barrier layer on said top surface of said insulating layer is greater in thickness than a second portion of said barrier layer on said side-wall surface of said insulting layer, said second portion of said barrier layer defining a space corresponding to said hole;

depositing a conductive layer over said first and second portions of said barrier layer while filling said space;

etching back said conductive layer until said first portion of said barrier layer is exposed to thereby form a plug portion that fills said space and has a top surface which projects above said top surface of said insulating layer; and

removing said first portion of said barrier layer until said top surface of said insulating layer is exposed to thereby form a contact plug that fills said space and has a top surface which projects above said top surface of said insulating layer,

wherein said barrier layer comprises a titanium film which has a first part that is contained in said first portion of said barrier layer and a second part that is contained in said second portion of said barrier layer, the thickness of said first part of said titanium film is 100 nm or more.

42. (New) The method as claimed in claim 41, wherein said barrier layer is formed by anisotropic sputtering.

43. (New) The method as claimed in claim 42, wherein said anisotropic sputtering is performed in an ion metal plasma sputtering manner.

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44. (New) The method as claimed in claim 42, wherein said anisotropic sputtering is performed in a collimate sputtering manner.

45. (New) The method as claimed in claim 42, wherein said anisotropic sputtering is performed in a long throw sputtering manner.

46. (New) The method as claimed in claim 41, wherein said barrier layer further comprises a titanium nitride film which is formed on said titanium film.

47. (New) The method as claimed in claim 41, wherein said top surface of said plug portion is lower than said top surface of said titanium film and is higher than said top surface of said insulating layer when said etching back said conductive layer is ended.

48. (New) The method as claimed in claim 41, wherein said thickness of said titanium film is 150 nm or more.

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